

REGIONAL FACILITY VS. ON-SITE DEVELOPMENT REGULATIONS: INCREASING FLEXIBILITY AND EFFECTIVENESS IN DEVELOPMENT REGULATION IMPLEMENTATION

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Abstract

Development regulations can sometimes be challenging to implement in ultra urban environments due to limited space, high land value, and the expense of retrofitting existing infrastructure. In addition, development patterns may not always correspond to high priority surface water management zones. Development-driven basin planning combined with regional detention and water quality facilities can be tools for locating surface water management investments strategically to protect aquatic resources while creating livable communities. This presentation highlights policy, legal, finance and technical issues and opportunities associated with a Seattle case study. The case study will help prompt discussion regarding the effectiveness of this strategy as a tool for surface water managers in urban jurisdictions to meet multiple interests and put limited stormwater management dollars to effective use.

A. Introduction

For purposes of discussion, this paper defines an off-site mitigation program as a program offered by a municipality that allows developers to meet on-site development requirements relating to stormwater by compensating the municipality to provide equivalent mitigation in an off-site public facility. Under this scenario, the municipality clearly assumes additional risk and responsibilities, and even perhaps additional costs, so why would a municipality consider such a program? Municipalities might consider offering an off-site mitigation program if:

- The municipality has planning, capital or performance stormwater management obligations, as well as authority to regulate development, and
- On-site stormwater management is required for new development or redevelopment projects, and
- Cost, environmental performance or community benefits can be gained by meeting the on-site requirements off site.

A survey of 26 local jurisdictions in Washington State revealed that jurisdictions are quite interested in understanding how to implement a program, and 9 jurisdictions have even implemented elements of a program. However, no jurisdiction had as yet developed a systematic, programmatic approach that addresses the key issues. This paper presents a discussion of the following issues organized around three areas of responsibility: municipal drainage management, NPDES permit compliance, and development regulation authority.

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Table 1 - Key Issues Associated with Implementing an Off-Site Mitigation Program

Issues	Key Question(s)
Municipal Drainage Management	
✓ On-site vs. Off-Site	<p>When could a municipality consider offering an off-site mitigation program for on-site development requirements?</p> <p>What are the technical trade-offs for a municipality between on-site mitigation and off-site mitigation of development impacts to stormwater?</p> <p>Why might a municipality consider offering an off-site mitigation program for on-site development requirements?</p>
✓ Development vs. Retrofit	Would municipally -constructed facilities address only mitigation triggered by development, or would the facility address existing runoff?
✓ Funding Options and Authority	What are the funding option(s) and associated authority necessary?
✓ Off-Site Mitigation Fee Structure	How would a fee for off-site mitigation be calculated? How important is it for a municipality to recover the full cost of the facility through fees?
NPDES Permit Compliance	
✓ NPDES Permit Requirements and Regulatory Authority	<p>Does the jurisdiction's NPDES municipal stormwater permit require the jurisdiction to regulate development to mitigate stormwater impacts? Does the jurisdiction have legal authority, and leeway under its NPDES permit, to allow off-site mitigation?</p> <p>What legal risks should be evaluated when considering an off-site mitigation program?</p>
✓ Point of Compliance	How is the municipality's point of compliance determined for evaluating performance?
✓ Environmental Protection	How is the regional facility determined equally or more protective than on-site projects?
✓ Timing	What is the timing of development and regional facility construction? What if the development occurs before the regional facility is constructed—leaving a window of time during which runoff is uncontrolled?
Development Regulation Authority	
✓ Applicability	How is applicability established for the program? To which developments is an off-site option made available? How are developments handled that are not upstream of a planned or constructed facility?

In the next section, this paper will provide a Seattle context, including the regulatory background, some local drivers that invite further examination of off-site mitigation in Seattle, and a case study overview. The following section of the paper will provide discussion of the key issues associated with off-site mitigation, using the Seattle case study as an example to walk through the policy and legal implications of the issues identified. Finally, the paper concludes with some thoughts on when regional off-site mitigation makes sense and ideas for how these opportunities fit into the traditional basin planning framework.

B. Background, Context and Case Study

Seattle Context

The Greater Seattle Area is Washington's largest urban center covering 60 square miles and a population over 3 million and growing. Over the past 30 years, the region has grown nearly twice as fast as the national average. The City of Seattle, itself, is just over 500,000 and fully developed with very few remaining parcels that have not yet been developed. Known as the 'Emerald City,' Seattle is surrounded by water and mountains on all sides. Functioning almost like an island, Seattle drains to the Puget Sound to the West, Lake Washington to the East, the Duwamish River to the South, and Lake Union in the middle.

As a local government, the City of Seattle is multifaceted. In addition to possessing local police powers and regulatory authority for land use and development, the City includes utility departments: Seattle Public Utilities (providing drainage, wastewater, drinking water, and solid waste utility services) and Seattle City Light (providing electric service). Seattle is characterized by a complex drainage infrastructure, administered by Seattle Public Utilities. Nearly 1/3 of the City is the traditional combined system conveying both stormwater and wastewater to the regional wastewater treatment facility operated by the County, with the City's combined sewer overflows regulated by Washington State under a CSO NPDES permit. The remainder of the City is regulated under the municipal separate storm sewer system ("MS4") NPDES permit draining to the surrounding water bodies through more than 200 drainage basins. These basins range in size up to 7,000 acres, though half of the basins are less than 100 acres in size and drain through piped infrastructure directly to large receiving water bodies. About one-third of the jurisdiction drains via informal "ditch and culvert" conveyance system to creeks and then to the surrounding water bodies.

Politically, Seattle has generally tried to encourage development within the City particularly in downtown and the urban villages designated for additional growth under the City's comprehensive planning. This development is with few exceptions redevelopment—that is replacing existing impervious surface with greater density. As the city densifies, demands have increased for public transit, affordable housing, and pedestrian oriented retail with a number of civic scale projects in planning, design or construction. Seattle's urban character is strongly influenced by its neighborhoods with a priority in recent years to coordinate City improvements, including infrastructure, open space and pedestrian amenities, around neighborhood plans. Seattle residents tend to support environmental values, with a particular interest in protecting and enhancing the urban creeks, as demonstrated through several community-initiated watershed action plans.

Regulatory Context

Since 1995, six Washington entities have been covered by watershed-based general NPDES Phase I MS4 permits issued by the Washington State Department of Ecology ("Ecology"): City of Seattle (with one co-permittee), City of Tacoma, King County, Pierce County, Snohomish County, and the Washington State Department of Transportation; Clark County's permit differs slightly.

The 1995 MS4 permits required each municipality to create a stormwater management program ("SWMP") which had to be approved by Ecology by a certain date during the permit term. The permits required adoption of development regulations, source control efforts, enforcement of Stormwater Code pollutant prohibitions, coordination with other jurisdictions, education, planning and reporting. The permits also required compliance with state water quality standards but provided that "development and implementation of approved stormwater management programs represent ongoing efforts towards meeting those standards

on an approved compliance schedule” The permits required each Phase I local jurisdiction to adopt a set of ordinances regulating the stormwater impacts of new development and redevelopment, during and after construction. Less typically, the SWMPs and ordinances were required to be approved by Ecology as being “equivalent” to the 1992 state stormwater management manual guidance issued by the state. The manual addresses both flow and quality of stormwater discharges from developed sites. Municipalities have had varying experiences obtaining timely Ecology approval of the SWMPs and of development ordinances. Ecology staff expressed frustration at the staff time required for individual municipal review, and municipalities chafed at the mandate to use local regulatory powers subject to Ecology approval.

Ecology’s 1995 MS4 Phase I permits still cover the seven jurisdictions, and Ecology has set the reissuance effort aside for the time being in favor of other stormwater priorities. The state has not yet determined how it would permit ports, drainage districts, or other entities that may fit the Phase I description, and Phase II jurisdictions have not yet come under permit. Therefore, a patchwork of mandatory stormwater development regulation exists in Washington State, with only the largest local jurisdictions currently required by NPDES MS4 permits to regulate development in a certain manner.

In addition to Clean Water Act regulation, western Washington has been challenged since 1999 with responding to threatened species listings of the Puget Sound chinook and of bull trout. The listings have prompted independent action by the City and other local governments to preserve these aquatic species. Ecology has voiced both a desire to tighten its regulation of MS4s and a fear of liability under the Endangered Species Act for failing to regulate strictly enough.

The next Phase I MS4 permit may test the boundaries of regulation for municipal stormwater. Issues will likely include whether the permit will require (1) compliance with water quality standards at MS4 outfalls or at private development sites, (2) restoration of water quality or habitat within a defined period of time, (3) stormwater planning with specified products which could form the basis for future permits, (4) land use planning according to stormwater priorities, or (5) more rigorous local regulation and enforcement, possibly requiring retrofitting or requiring municipalities to ensure compliance by private parties.

Seattle’s on-site Stormwater, Grading and Drainage Control Code (“Code”) development requirements are found in the Seattle Municipal Code, Chapters 22.800-22.808, enacted by the City Council and in associated rules adopted by City departments under administrative authority. (See <http://www.cityofseattle.net/dclu/codes/sgdccode.htm>) In 2000, the City successfully and amicably negotiated to obtain Ecology’s approval of certain required elements, including on-site detention for sites with 5,000 square feet of new and replaced impervious surface and on-site water quality treatment for sites with 5,000 square feet of new, or one acre of new and replaced pollution generating impervious surface.²

Ecology has approved three options in the Code or rules for approving an alternative to on-site requirements—each with provisions to demonstrate that a proposed alternative is equally protective of the environment. Ecology agrees that the City may change its development requirements generally through basin planning, “provided the level of protection for human health, safety and welfare, the environment, and public or private property will equal or exceed that which would otherwise be achieved.” Ecology has also approved the City’s process of granting an exception to a stormwater requirement on a project-by-project basis “if the [City] determines that it is likely to be equally protective of public health, safety and welfare,

² Pollution generating impervious surface includes areas subject to vehicular use, roofs that include zinc material, and landscaped areas.

the environment, and public and private property as the requirement from which an exception is sought.” And finally, Ecology approved the option to meet on-site water quality requirements off-site if there is a City-approved integrated drainage control plan, which is “a drainage control plan that substitutes water quality treatment from one or more projects through the design of and installation of offsite facilities within a basin draining to the same receiving water body,” accompanied by specific applicant contributions and a construction start date within five years. The City has not yet asked Ecology to approve the option of off-site flow control through an integrated drainage control plan.

Case Study Overview: Urban Center Re-development in Creek Watershed

A number of proposed civic-scale developments in Seattle, including large low-income housing projects, several major transportation projects, and a few urban center developments, are worth considering for an integrated drainage plan approach with off-site drainage facilities. One of the case studies being considered is an urban center located in Seattle’s largest creek watershed, (7,000-acres, 11 sq. miles) which drains to Lake Washington. The watershed fabric consists primarily of single-family neighborhoods (with over 75,000 residents) intersected by several commercial arterials and a major interstate highway. The creek demonstrates characteristically urban hydrologic patterns, with flashy uncontrolled storm flows and low summer base flows. Flowing primarily through residential backyards, existing development is more often within the 100 foot riparian corridor than not, and the banks are often reinforced to protect these buildings. Despite encroachment and relatively poor benthic health, the creek hosts native vegetation and several fish species, and the community has expressed interest in protecting and enhancing the creek by organizing a community-initiated watershed action plan process among other efforts. The development regulations described earlier are one tool for improving creek health. However, development patterns tend to be slow and dispersed throughout the watershed save for a few areas, such as the urban center, expected to experience more intense growth. For example, over a three-year period, 86 development permits were issued in the watershed. Only 16 of these projects were large enough to trigger Ecology thresholds for development requirements and totaled 4 acres out of the 7,000 acre watershed.

Although the urban center is currently fully developed, the center is expected to redevelop dramatically over the next ten to twenty years with several civic projects, a large retail development and a major transit hub. The community has developed a neighborhood plan expressing a vision of additional quality open space, pedestrian-oriented streets, and civic center amenities including a library and community center. Much of the area was developed prior to the current stormwater development requirements and thus drainage flows directly to the creek without treatment or flow control.

In anticipation of this growth, the City is considering developing an integrated drainage plan to address the drainage issues associated with the projected development at a sub-basin scale rather than a project-by-project approach. The plan could help identify one or more sites to locate City-owned and City-operated regional stormwater detention and treatment facilities within the sub-basin. Preliminary technical analysis indicates a 2.5-acre site could potentially manage over 30 acres of drainage. The facilities could provide management for both existing runoff from impervious areas not expected to redevelop, and runoff that will be subject to development requirements. Thus, this project could be designed to accommodate future partners that may use the facility to meet their stormwater treatment requirements. A partnership approach could replace the need for numerous small, underground facilities with one larger facility that could provide additional public amenities, such as landscaped open space with a trail extending the current creek trail system and native landscaping.

C. Discussion of Key Issues

The discussion of key issues is organized around three areas of jurisdictional responsibility: Municipal drainage management, NPDES permit compliance, and development regulation authority. In addition, the issues have been organized around a series of questions in the order a municipality might face them if considering whether to offer an off-site mitigation program.

Municipal Drainage Management

✓ *On-site vs. Off-Site*

When could a municipality consider offering an off-site mitigation program for on-site development requirements?

To successfully implement an off-site mitigation program, a municipality must possess both (1) sufficient police power authority to plan for and regulate development -- typical of a local government -- and (2) authority and responsibility for the quality and quantity of storm drainage, including compliance with any NPDES municipal stormwater permit -- typical of a drainage or stormwater utility. Seattle has this confluence of authority and responsibility, but this is not the case in many other local jurisdictions, where local regulatory authority and drainage system authority are split between entities. Furthermore, options for building and financing regional facilities are typically determined by state law, which may also constrain the options for a municipality to receive funds in connection with approving construction or development. Jurisdictions that lack complete authority may consider working with other jurisdictions by agreement, undertaking joint projects, or seeking legislation to enhance authority.

What are the technical trade-offs for a municipality between on-site mitigation and off-site mitigation of development impacts to stormwater?

The technical advantages and disadvantages of off-site mitigation vary under different situations. The table below outlines a general checklist of pros and cons.

Table 2 - Pros and Cons of an Off-Site Mitigation Program

	Advantages	Disadvantages
Performance	Off-site location may allow more space intensive, but superior performing technologies such as constructed wetlands or bioswales.	If soil permits, infiltration technologies can perform best if decentralized throughout the basin—performance relies on sound maintenance practices.
Planning	Municipality has an opportunity to strategically locate investments to address priority water body or known water quality issues	The municipality must take on the responsibility of determining where to site a facility based on priorities and opportunities. Large regional facilities may be difficult to site in urban areas.
Funding	Partnering may open up additional revenue sources to fund more effective regional facility.	Partnering may complicate facility financing and not fully fund the facility.
Maintenance	The municipality allocates staff to maintenance of a few public facilities, rather than to review, inspection and enforcement of multiple private facilities. Increased assurance of maintenance over time.	Maintenance responsibilities are shifted to the municipality, including disposal of hazardous waste material.
Liability		The municipality takes on the responsibility for managing the risk associated with changing the location and party responsible for implementing water quality requirements. Innovative local regulation or funding may draw legal challenge or present permit compliance issues.
Community	In facility siting and design, municipality can assist in implementing community development plans for open space, aquatic health and urban centers.	Community disagreement about use of public resources and siting.

Why might a municipality consider offering an off-site mitigation program for on-site development requirements?

Given the trade-offs outlined above, regional off-site mitigation is not advantageous in all circumstances. Under what circumstances should a utility consider an off-site program?

In general if the off-site program can offer environmental, cost or community benefits that outweigh the disadvantages, then an off-site approach should be considered.

Environmental—If analysis suggests that stormwater investments would be more effective located more strategically -- either to address a more critical water quality issue, or to protect a higher priority water body. In addition to flexibility in location, a municipality may have the opportunity to use a more effective technology such as a biologically-oriented system that enhances treatment through plants and micro-organisms.

Cost—Seattle, for example, has responsibility under its NPDES MS4 permit for reviewing, permitting, inspecting and enforcing maintenance practices for privately developed stormwater facilities. These responsibilities require staff time and associated resources and are likely to increase under future MS4

permits. Municipalities might consider consolidating these costs in an off-site mitigation program if the programmatic costs of administering on-site requirements over time outweigh the costs of the design, construction and maintenance of a publicly owned structural facility. In some cases the municipality already owns land for potential facilities that could substantially influence cost evaluations.

Community Goals--More often municipalities are being asked to play a role in the shaping of communities. Growth management plans or other long-term development plans typically specify areas targeted for future higher density development and other areas designated as green space to provide parks and protect environmental resources. Municipalities can play a role in directing stormwater improvement, by transferring investments from areas targeted for density to areas specified through regulation or community goals for higher levels of environmental protection. In addition, municipalities can often integrate open space goals into facility design to meet multiple goals in limited space.

In the Seattle case study, an off-site approach could fulfill both environmental and community goals. A regional facility would be expected to provide better technology, target more critical flows and ensure better maintenance over time. If no off-site program were available, high land value in the area would likely drive developers to use multiple underground vaults to address stormwater requirements on site. In contrast, a regional facility could offer constructed wetland technology with a downstream bioswale on a site located at the mouth of the drainage basin discharging to the creek. In addition to a superior technology, a municipality could have more confidence in the ability of its staff to maintain a single public facility, than in the municipality's ability effectively to enforce maintenance practices on multiple private underground facilities. The site's location, at the mouth of the basin just prior to discharging to the creek, provides maximum flexibility in determining what area might be routed to the facility for treatment, thus allowing the municipality to prioritize and mitigate drainage areas with higher pollutant potential.

Community goals can be served by integrating open space amenities with existing creek trail systems and providing greater flexibility to implement desired development projects within the confines of limited space.

Cost is a determining factor, and it will vary greatly from site to site. A regional facility can be funded in several ways, depending on the options available to a municipality or utility under state law. A regional facility should not be expected to be funded entirely by private development, even if it provides some service to redevelopment. This is true because, as in Seattle's case, the facility will likely address some existing flows in addition to the developed sites. Also, municipal staff resources would be spent on design, construction and maintenance.

✓ *Development vs. Retrofit*

Would municipally-constructed facilities address only mitigation triggered by development, or would the facility address existing runoff?

This decision will vary for each scenario and may be influenced by the following factors:

- size of the site in relation to the drainage area,
- the water quality characteristics of the drainage area,
- the relative ease of directing flows to the site, and
- how the site fits in the municipality's priorities for retrofitting.

If the site is large enough to accommodate additional flows, and the drainage is relatively easy to direct to the site, the municipality might consider combining off-site mitigation with mitigation of existing development. Much of the cost of capital facilities is in the design, permitting and grading— and increasing the size of one facility is often much less expensive than creating a separate facility. The municipality may also have an interest in demonstrating a broader general public drainage benefit of the facility is funded in part by drainage rates.

In the Seattle case study, some portion of the facility would likely address existing runoff providing public benefits beyond enhanced development mitigation. The appropriate portion will vary by project and be determined through technical analysis at the sub-basin level.

✓ *Funding Options and Authority*

What are the funding option(s) and associated authority necessary?

Several options may be available for funding an off-site regional drainage facility. The available options will depend on existing municipal or utility authority. In some cases, funding options may be combined. Legal advice is essential in planning municipal action, and sorting through the range of legal authority available to a municipality can present a significant challenge.

A municipality might choose to build and fund a regional facility using general municipal revenue or drainage-specific funds:

- Use general municipal revenue, not associated with drainage rates or development options.
- Use general drainage utility rates. Costs could be spread over a larger service base.
- Create differential drainage utility rates reflecting the drainage service provided in geographical areas. Increases could be targeted to areas receiving or needing more intensive service.
- Create drainage utility connection fees for users of a new facility. After a facility is built using municipal authority and funds, drainage utility fees are charged to new users of the regional facility.

Each of these regional facility funding choices would leave legal and policy questions for a municipality such as Seattle that currently requires on-site drainage facilities for redevelopment, as a result of its MS4 permit:

- Must developers still build on-site facilities, as required by the local development ordinance and the NPDES MS4 permit issued to the City?
- If not, is it fair or legal to impose a general fee increase to build facilities that in part benefit private development, without charging extra to the benefited properties?
- For funding, what difference does it make whether or not a development's actual drainage is managed at a regional facility?
- If on-site detention/treatment requirements for new development will be fulfilled off site by using capacity at a regional facility, can the local on-site drainage requirements be lifted? If so, how? What can or should the developers be charged for off-site regional drainage service?
- What legal authority is present, both to create a different fee for a developer (which could be a drainage rate question) and to allow a developer to meet its drainage regulation obligation off-site rather than on-site (which could relate to municipal responsibilities as a regulator of development and an NPDES MS4 permittee)?

An appealing option for funding at least part of a regional facility might be to create a fee for off-site mitigation that developers could pay to fund off-site municipally-owned regional drainage service, instead of requiring the developers to build on-site detention or treatment structures.

- Create a development-related alternative to pay a fee to obtain drainage service at the regional facility rather than on site.

Utility rates or general utility funds could be used to build over-sized regional facilities. A municipality could make excess capacity available to developers for a fee, to satisfy developers' on-site requirements. Arrangements might be voluntary or mandatory, for a determined geographical area. Legal authority must be established. In such a case, state law may explicitly permit developers to contribute to the cost of a regional municipal facility, on a mandatory or voluntary basis. On the other hand, state law may limit or prohibit this arrangement, or its mandatory nature.

In some limited cases, there may also be an opportunity for developers to agree among themselves to build a privately-funded off-site facility.

- An agreement among parties to provide service off site, independent of municipal rates or fees. In issuing development permits, the municipality as a regulator would have to determine whether the on-site facility requirement would be met by the regional facility. The facility might be independently operated, or the municipality might later choose to acquire the facility.

✓ *Off-Site Mitigation Fee Structure*

How would a fee for off-site mitigation be calculated? How important is it for a municipality to recover the full cost of the facility through fees?

What are the options for structuring fees paid to a municipality for providing off-site mitigation at a municipally-owned regional facility? Again, legal authority may determine the calculation methods available for utility fees or development-related fees, but here are some options to consider in setting a fee:

- Based on cost of off-site facility:
 - Pro-rata portion of the actual off-site facility cost based on capacity
 - based on estimated runoff
 - based on acreage or square footage of impervious surface
 - Standardized fee per unit runoff reflecting average current cost of off-site facility construction
- Based on estimated cost of building facility on-site.

In some cases it may be wise to balance the on-site costs against the off-site costs, considering the options available to a developer. For instance, if participation in a regional facility is an option to providing on-site detention or treatment, the fee structure may affect the willingness of developers to participate in an off-site option. A municipality should recognize that the full cost of a regional facility is unlikely to be recovered from development-related contributions.

Environmental Permit Compliance

✓ *NPDES Permit Requirements and Regulatory Authority*

Does the jurisdiction's NPDES municipal stormwater permit require the jurisdiction to regulate development to mitigate stormwater impacts? Does the jurisdiction have legal authority, and leeway under its NPDES permit, to allow off-site mitigation?

The degree of legal authority municipalities have to mitigate stormwater development requirements off site may range from explicit direction to explicit prohibitions. Each municipality should consider not only its police power, utility and other state law authority, but also any requirements of its NPDES MS4 permit. Each municipality will have to evaluate the appropriate level of authority and permit obligations, and the associated level of risk, as well as the likely perspective of the NPDES permit issuing authority. The following scenarios provide an example of the range of authority level and associated risks:

- Explicitly authorized
- Generally authorized
- Not Addressed
- Explicitly not permitted

In the Seattle case study, the City's NPDES MS4 permit requires the City to impose on-site detention and treatment requirements for certain new development and redevelopment. The City's Code was required to be, and was, approved by Ecology as equivalent to Ecology's guidance. Ecology's model of regulation is site by site, but there is some leeway for modifying on-site requirements with sufficient justification. Both Ecology's manual of model development regulations and the City's Code identify basin planning as a means for jurisdictions to alter development requirements within the basin, but neither specifically mentions off-site mitigation. Ecology has authorized the City to make off-site accommodations for treatment requirements based on a City-approved integrated drainage control plan for construction that begins in five years, but this has not yet been extended to detention. The City will need to determine what is necessary and sufficient for basin planning and will need to justify an off-site mitigation program in a way that is consistent with both the MS4 permit and the City's authority and needs.

What legal risks should be evaluated when considering an off-site mitigation program?

An off-site mitigation program can be legally risky or unexpectedly expensive. A municipality's authority to implement the program may be questioned. A municipality may incur liability if it agrees to construct a regional facility but is eventually unable to construct it, due to permitting or other complications. If the facility was intended to replace on-site drainage control, then stormwater that would have been detained or treated on site could go entirely unmanaged, and the developers' potential contribution to regional stormwater control could be lost. Depending on NPDES MS4 permit conditions, the municipality might be obligated to site the facility elsewhere or might be out of compliance. Under some funding mechanisms and state law, the municipality might be obligated to refund monies not used within a certain time, losing the financial means to complete the project. For instance, given permit constraints, funding uncertainties, and changing priorities, even five years can be an ambitious timeframe for public facility construction.

✓ *Point of Compliance*

How is the municipality's point of compliance determined for evaluating performance?

For purposes of this discussion, point of compliance is the point at which the development requirement must be met through equivalent mitigation. Theoretically point of compliance could be any of the following scenarios, but these scenarios differ in risk level and relationship to the regulated drainage area.

- Site discharge point
- Point between site and discharge to receiving water body
- Discharge point to the receiving water body
- Receiving water body

A municipality must define “receiving water body” for this purpose. If “receiving water body” means water of the state, including a small creek, then off-site mitigation locations upstream of a discharge are limited. If, on the other hand, “receiving water body” means only specified larger streams, rivers, or lakes, then a greater number of off-site locations may be available.

One option is to evaluate performance at the receiving water body, or at the discharge point to the receiving water body. Ecology has approved the option in Seattle to meet on-site water quality treatment requirements from one or more development projects through off-site facilities within a basin draining to the same receiving water body. This language defines point of compliance as the receiving water body. This approach is more suitable for addressing water quality in major water bodies, than for addressing flow control in creeks. For example, if off-site flow control is provided in a separate basin draining to a creek at a point lower in the system than the basin with the development project, then technically an opportunity to improve the flow regime in the reach between the sub-basins has been missed. Locating a regional facility downstream of a participating development site would result in missed protection of the portion of the stream between the development site and the regional facility. This makes a case for evaluating performance for creeks at the basin's discharge point to the water body, not in the water body itself.

A municipality will likely want to retain maximum flexibility for siting regional facilities, to site facilities at points of opportunity and where they will have the greatest impact. To this end, an important consideration for funding, development regulation, and permit compliance is whether or not the off-site facility will provide drainage service for the exact same stormwater that would have been managed on site under local development regulations. If the same water will be managed, it will be simpler and less risky to link development requirements and funding from partners to an off-site municipal facility. Funding options that do not rely on development-related fees or partnering present even less risk.

Available legal authority will determine to what extent funds related to a development site can be used for an off-site mitigation facility that does not detain or treat the same stormwater. For instance, it may be that connection charges are authorized only for developments directly served by a facility; in such a case, access to the facility capacity would need to be consistent with authority. A fee could spur a legal challenge if it is seen, on one hand, as opportunistically charging development for general municipal services provided elsewhere or, on the other hand, giving benefit to development at unfair public expense.

As to permit compliance, the NPDES permitting agency will likely have an opinion about whether detention or treatment services should be moved from the site of new development, and whether flow from the development should be allowed to go unmanaged. The agency may support municipal spending on regional facilities but hesitate to approve transferring drainage management from one subbasin to another. Depending on the permit's terms and the agency's involvement with local regulations, the agency may even

view an off-site mitigation program as noncompliance, so a municipality should work proactively with the agency to smooth out disagreements.

Even if the permitting agency agrees that off-site mitigation meets the MS4 permit obligations, the municipality should consider whether it is willing in the long term to take on detention or treatment functions regionally that would otherwise be the obligation of site developers. Typically, municipal regulation holds site operators responsible for discharge from their sites. If a problem is detected downstream in the MS4, upstream dischargers can be held accountable. An off-site mitigation program could alter this dynamic. If an MS4 permit requires that municipal stormwater complies with water quality standards before discharge to waters of the state, an off-site mitigation program could shift to the public, part of a private site-related water quality obligation.

✓ *Environmental Protection*

How is the regional facility determined equally or more protective than on-site projects?

There are several options for evaluating the equivalency of on-site and off-site approaches, which is a key inquiry to justify off-site vs. on-site detention or treatment in basin planning or in issuing a development permit.

- Equivalent impervious surface (or pollution-generating surface)
- Equivalent volume of water

In addition to these one-to-one evaluations, greater effectiveness can be achieved by using a superior technology than would be used on-site, and by treating areas contributing higher pollutant levels within the sub-basin. Although prior to development the effectiveness of these two scenarios cannot be measured, a simple model using information from previous research studies can be used to estimate the proposed reductions under the two scenarios.

In general consolidating maintenance and providing bio-filtration features can be more protective of the environment than multiple underground vaults because the effectiveness of WQ facilities is very dependent on the frequency and quality of maintenance. By leveraging development and rate investments to treat both existing runoff and runoff from a development, a regional project can be more protective.

✓ *Timing*

What is the timing of development and regional facility construction? What if the development occurs before the regional facility is constructed—leaving a window of time that during which runoff is uncontrolled?

The least risk and most environmentally protective option is for the jurisdiction to first build the facility and then offer off-site credit for future development projects. However, there may be partnership opportunities where development occurs before a facility is identified or built; if those potential partners need development permits before the option of regional stormwater management becomes available, opportunity may be lost as partners opt for on-site facilities.

On the other hand if the municipality sizes and constructs a facility “on speculation,” and the future development does not occur, or developers choose not to buy excess capacity in the facility under a voluntary arrangement, then this capacity is an avoidable ratepayer cost.

There may be regulatory risk as well. A NPDES permit issuing agency may generally support off-site mitigation in theory, recognizing the greater efficiency that may be possible. However, the permit issuer and the municipality may have different perspectives if an off-site mitigation plan involves a delay in providing detention or treatment for an area, as compared to what would be provided at the time of new development under local on-site requirements. Such a delay may also create complications in issuing development permits, where the on-site conditions cannot be fulfilled off site in the same time frame. Municipalities may need to negotiate with the NPDES permitting authority to retain maximum flexibility in timing. Local law may need to explicitly allow a developer a calculated delay in detention or treatment, if it there is a firm commitment to provide the same off site.

Development Regulation Authority

✓ *Applicability*

How is applicability established for the program? To which developments is an off-site option made available? How are developments handled that are not upstream of a planned or constructed facility?

Typical development regulation criteria include:

- project size— Municipalities may only want to administer projects above a certain size threshold where there will be more mitigation per transaction. On the other hand, municipalities may decide that they can save administration costs by consolidating the review, inspection and enforcement of smaller facilities into a single regional facility. In this case project size may not be a criteria.
- amount of pollution-generating surfaces— Municipalities may want to target land uses that are known to contribute higher pollutant levels. On the other hand, municipalities may want to target “cleaner” development projects to transfer the investment to areas contributing higher pollutant levels. (For example, trading on-site residential development mitigation for a high turn-over commercial parking lot that is currently un-treated.)
- drainage destination (to a creek or specific water body)— Depending on the utility’s regulatory flexibility and sophistication in prioritizing water bodies, the municipality may want to trade all mitigation in one basin for treatment in another. However, depending on the specific situation, this approach can undermine the development regulation by raising questions regarding the direct impact of the requirement.

Additional application criteria for a municipally-administered program may include whether project is located:

- within a priority drainage basin— The municipality may have designated specific basins for program implementation, and only development in these basins would be applicable for the program. Basins may be chosen through a prioritization process, through a growth management planning process, or a combination of both.
- upstream of planned or constructed facilities— Development projects may be in the designated basin, but not directly upstream of a planned or constructed facility. In this case, the municipality must decide whether the drainage from the development project must flow through the facility to

meet off-site mitigation, or whether an equivalent amount and quality of stormwater can be mitigated within the basin prior to discharging to the receiving water body. Associated issues are raised in the discussion of point of compliance, above.

Finally, the jurisdiction must decide how much capacity to provide and whether applicability will need to be capped at a specific threshold and perhaps a timeframe. Capping the facility capacity ensures the municipality will not have to site, design and build another facility if development continues beyond projections. Ideally a facility would be sited and designed to compliment the development plan for the area. The program should outline a template that ensures consistency, but allows for unique opportunities based on the project location, circumstances and management goals for receiving water body.

The legal issues in determining applicability are similar to those discussed with in relation to the point of compliance. Legal authority may limit the geographical boundaries for an off-site mitigation program. For some funding mechanisms, it may be essential that flow from the development actually be detained or treated by the regional facility in order to support a fee. In order to remove on-site detention or treatment requirements, it may be necessary to justify that the alternative is equally protective of public health, safety, and welfare, the environment, and public and private property. This may be a challenge if a regional facility provides benefits at a location far away. In other cases, using fees for off-site mitigation not directly related to a site can complicate development regulation in the future. For instance, if a development requirement is lifted upon payment of a fee but flow from that specific site is not detained or treated, what happens if the property is redeveloped later? A municipality should consider its overall strategy for off-site mitigation and deal with as many issues as possible when the program is esatblished, to provide a predictable basis for future development.

D. Conclusion

Off-site mitigation programs have the potential to shift development-required investments to address high surface water priorities identified through basin planning. However, this type of program is not applicable or appropriate to all municipalities, and even in appropriate situations, the approach shifts responsibility and liability to the municipality. This paper has attempted to outline the municipal drainage management, NPDES permit compliance and development regulations issues associated with offering an off-site mitigation program. This paper is intended to prompt discussion regarding the effectiveness of this strategy as a tool for surface water managers in urban jurisdictions to meet multiple interests and put limited stormwater management dollars to effective use.